Name: Date:

Polynomial Factoring solution (version 652)

1. **The quadratic formula says if $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$. Use the quadratic formula to solve the following equation.**

$$x^2 + 6x + 11 = 0$$

Simplify your answer(s) as much as possible.

Solution

$$x = \frac{-(6) \pm \sqrt{(6)^2 - 4(1)(11)}}{2(1)}$$

$$x = \frac{-(6) \pm \sqrt{36 - 44}}{2(1)}$$

$$x = \frac{-6 \pm \sqrt{-8}}{2}$$

$$x = \frac{-6 \pm \sqrt{-4 \cdot 2}}{2}$$

$$x = \frac{-6 \pm 2\sqrt{2}\, i}{2}$$

$$x = -3 \pm \sqrt{2}\, i$$

Notice that i in NOT under the square-root radical symbol!!

2. **Express the product of $8 - 7i$ and $-2 - 6i$ in standard form $(a + bi)$.**

Solution

$$(8 - 7i) \cdot (-2 - 6i)$$

$$-16 - 48i + 14i + 42i^2$$

$$-16 - 48i + 14i - 42$$

$$-16 - 42 - 48i + 14i$$

$$-58 - 34i$$

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3. **Write function $f(x) = x^3 - 5x^2 - 12x + 36$ in factored form. I'll give you a hint: one factor is $(x - 2)$.**

Solution

	1	-5	-12	36
2		2	-6	-36
	1	-3	-18	0

$$f(x) = (x-2)(x^2 - 3x - 18)$$

$$f(x) = (x-2)(x+3)(x-6)$$

4. **Polynomial p is defined below in factored form.**

$$p(x) = -(x+2)^2 \cdot (x-1)^2 \cdot (x-4)$$

Sketch a graph of polynomial $y = p(x)$.